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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,461	01/05/2006	Warren Smook	9031-1017	1343
<div>466                      7590                      06/09/2009</div> <div>YOUNG &amp; THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314</div>				
EXAMINER				
LEWIS, TISHA D				
ART UNIT		PAPER NUMBER		
3655				
MAIL DATE		DELIVERY MODE		
06/09/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/563,461

**Applicant(s)**

SMOOK ET AL.

**Examiner**

TISHA D. LEWIS

**Art Unit**

3655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SD/CS)  
Paper No(s)/Mail Date \_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 15, 2009 has been entered.

### ***Response to Amendment***

Claims 1-13, 15 and 16 are pending in the application. Claim 14 is cancelled.

### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not persuasive. As to applicant's amendment adding the spaced studs as a limitation to suggest that the loads of the present invention and the prior art WO '891 is different is acknowledged, however; the stud limitation is disclosed in the prior art base references WO '644, WO '90 and WO '566, therefore; this limitation is still met by the rejection as set forth under 103(a).

As to applicant's argument that the examiner isn't considering the claimed invention as a whole as required by MPEP 2141.02 is acknowledged, however; the examiner isn't focusing on the bearings only for the rejection, but showing that it is already well known in the art to use taper bearings for supporting planet gears mounted/supported on a plate (50, which again can be considered a bogie plate as

claimed) of a carrier (30) having support for shafts (34) which support and locate planet gear bearings (72) mounting planet gears (6). Therefore, due to the limitations of the claim as recited being met by the prior art WO '891 combined with the base references, the invention is being considered as a whole by the examiner and as required by MPEP 2141.02.

As to applicant's argument suggesting that the prior art wouldn't have thought of using taper bearings with a bogie plate as claimed is acknowledged, however; these arguments, i.e., "degrees of freedom" are not claimed limitations or supported in the disclosure as originally filed, further more, the present claims are to be given the broadest reasonable interpretation "consistent with the specification" (MPEP 2111[R-5]) and presently due to the specification only disclosing that taper bearings can be used with the bogie plate (excluding applicant's arguments) the examiner is rejecting the claims in light of the current specification which doesn't disclose the degrees of freedom result as argued.

As to applicant's argument that it was surprisingly found that not having the added degrees of freedom of the planets on SRBs could at least partly be compensated by using the self-adjusting characteristics of the TRBs is acknowledged, however; Applicant's who allege they discovered the source of a problem must provide evidence substantiating the allegation, either by way of affidavits, declarations or by way of a clear and persuasive assertion in the specification (MPEP 2141.02, IV.).

In general, the use of taper bearings isn't new to the present invention or the prior arts used in the rejection since both disclose using taper bearings as the main bearing

in conjunction with the ring gear of the planetary gear unit which at least in Figure 7 of the WO '566 and WO '690 prior arts replace other types of bearings previously used with taper bearings, therefore, it would be obvious for one of ordinary skill in the art to also consider the use of these bearings for the planet gears to replace the bearings previously used.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-12, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/079644 in view of WO 03/002891 (IDS reference). As to claim 1, WO discloses a sun (14), planet (17) and ring gears (7) and a planet carrier (5), the carrier having circumferentially spaced studs (5b) which support a bogie plate (21), the bogie plate providing support for circumferentially spaced shafts (19) which supports and locates circumferentially spaced planet gear bearings (25) on which the planet gears are mounted. WO doesn't disclose the bearings being taper roller bearings.

WO 891 discloses a planetary gear transmission having a sun (2), planet (6) and ring gear (4) and a carrier (30) wherein planet gear bearings (70) in the form of taper roller bearings are used to support the planet gears.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the bearings of WO into taper roller bearings in view of

WO 891 since it is well known in the art to support planet gears on bearings in general and having taper roller bearings would not change the operation of the WO reference.

As to claim 2, WO discloses the planet gears arranged in axially aligned pairs (17a, 17b are at least two sets).

As to claim 3, WO discloses the bearings (25) supporting the pairs of aligned planet gears.

As to claim 4, WO discloses two pairs of each set positioned on opposite sides of the plate (17a and 17b are on opposite sides of plate 21).

As to claim 5, WO discloses the planet gears being each mounted on a pair of tapered roller bearings (Figure 3, 25 has separate bearings for 17a and 17b).

As to claim 7, WO discloses the bearings being supported by a shaft (19) which self adjust in an angular position relative to the plate.

As to claim 8, WO discloses the bearings for some of the planets being supported on a shaft (not referenced) rigidly secured to the bogie plate.

As to claim 9, WO discloses each shaft rigidly secured to the plate.

As to claims 10, 15 and 16, WO discloses the bogie plate (21) being able to deform elastically (slightly resilient) to allow self adjustment of the angular position of each shaft relative to the axis of rotation of the ring gear.

As to claim 11, WO discloses a main bearing (27) having an inner ring bearing surface (27b) of a diameter greater than that of a toothed surface of the ring gear.

As to claim 12, WO discloses the carrier (5) having a radially extending torque path which is torsionally stiff (due to bolting to hub) but relatively compliant in an axial direction parallel with the axis about which the forces act.

Claims 1-13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/14690 in view of WO 03/002891 (IDS reference). As to claim 1, WO discloses (see Figure 4) a sun, planet and ring gears and a planet carrier, the carrier having circumferentially spaced studs (42) which support a bogie plate (21), the bogie plate providing support for circumferentially spaced shafts (44) which supports and locates circumferentially spaced planet gear bearings on which the planet gears are mounted. WO doesn't disclose the bearings being taper roller bearings.

WO 891 discloses a planetary gear transmission having a sun (2), planet (6) and ring gear (4) and a carrier (30) wherein planet gear bearings (70) in the form of taper roller bearings are used to support the planet gears.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the bearings of WO into taper roller bearings in view of WO 891 since it is well known in the art to support planet gears on bearings in general and having taper roller bearings would not change the operation of the WO reference.

As to claim 2, WO discloses the planet gears arranged in axially aligned pairs (Figure 4).

As to claim 3, WO discloses the bearings supporting the pairs of aligned planet gears (Figure 4).

As to claim 4, WO discloses two pairs of each set positioned on opposite sides of the plate (Figure 4).

As to claim 5, WO discloses the planet gears being each mounted on a pair of tapered roller bearings (Figure 4).

As to claim 6, WO discloses the tapered roller bearings arranged in an O configuration (claim 21).

As to claims 7 and 13, WO discloses the bearings being supported by a shaft (26 flexpin shaft) which self adjust in an angular position relative to the plate.

As to claim 8, WO discloses the bearings for some of the planets being supported on a shaft (not referenced) rigidly secured to the bogie plate.

As to claim 9, WO discloses each shaft rigidly secured to the plate.

As to claims 10, 15 and 16, WO discloses the bogie plate being able to deform elastically to allow self adjustment of the angular position of each shaft relative to the axis of rotation of the ring gear.

As to claim 11, WO discloses a main bearing having an inner ring bearing of a diameter greater than that of a toothed surface of the ring gear (claim 3).

As to claim 12, WO discloses the carrier having a radially extending torque path which is torsionally stiff but relatively compliant in an axial direction parallel with the axis about which the forces act (claim 6).

Claims 1-13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/014566 in view of WO 03/002891 (IDS reference). As to claim 1, WO discloses (see claim 1) a sun, planet and ring gears and a planet carrier,



the carrier having circumferentially spaced studs (42) which support a bogie plate (21), the bogie plate providing support for circumferentially spaced shafts (44) which supports and locates circumferentially spaced planet gear bearings on which the planet gears are mounted. WO doesn't disclose the bearings being taper roller bearings.

WO 891 discloses a planetary gear transmission having a sun (2), planet (6) and ring gear (4) and a carrier (30) wherein planet gear bearings (70) in the form of taper roller bearings are used to support the planet gears.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the bearings of WO into taper roller bearings in view of WO 891 since it is well known in the art to support planet gears on bearings in general and having taper roller bearings would not change the operation of the WO reference.

As to claim 2, WO discloses the planet gears arranged in axially aligned pairs (claim 2).

As to claim 3, WO discloses the bearings supporting the pairs of aligned planet gears (claim 2).

As to claim 4, WO discloses two pairs of each set positioned on opposite sides of the plate (claim 3).

As to claim 5, WO discloses the planet gears being each mounted on a pair of tapered roller bearings (claim 19).

As to claim 6, WO discloses the tapered roller bearings arranged in an O configuration (claim 27).

As to claims 7 and 13, WO discloses the bearings being supported by a shaft (26 flexpin shaft) which self adjust in an angular position relative to the plate (claim 4).

As to claim 8, WO discloses the bearings for some of the planets being supported on a shaft (Figure 4) rigidly secured to the bogie plate.

As to claim 9, WO discloses each shaft rigidly secured to the plate (Figure 4).

As to claims 10, 15 and 16, WO discloses the bogie plate being able to deform elastically to allow self adjustment of the angular position of each shaft relative to the axis of rotation of the ring gear (claims 1 and 4).

As to claim 11, WO discloses a main bearing having an inner ring bearing of a diameter greater than that of a toothed surface of the ring gear (claim 10).

As to claim 12, WO discloses the carrier having a radially extending torque path which is torsionally stiff but relatively compliant in an axial direction parallel with the axis about which the forces act (claim 13).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 644 in view of WO 891 as applied to claim 1 above, and further in view of WO 02/14690 and WO 03/014566. WO 644 in view of WO 891 disclose taper roller bearings, but does not disclose the configuration in which the bearings are disposed.

Both WO 566 and WO 690 disclose having taper roller bearings disposed in an O configuration.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the bearing configuration of WO 644 in view of WO 891

and further in view of both WO 566 and WO 690 references to minimize overhung loads on the planet components

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 644 in view of WO 891 as applied to claim 1 above, and further in view of WO 690 and WO 566). WO 644 in view of WO 891 disclose the planet gears supported to the bogie plate by a shaft, but does not disclose the shaft being of a flexpin.

Both WO 566 and WO 690 references disclose a shaft (26) being of a flexpin operation due to flexing of component (33).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the shaft (19) of WO 644 in view of WO 891 and further in view of both WO 566 and WO 690 references to isolate axial forces from the planet gears during operation.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TISHA D. LEWIS whose telephone number is 571-272-7093. The examiner can normally be reached on M-F 9:30AM TO 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHARLES A. MARMOR can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tdl  
/TISHA D. LEWIS/  
Primary Examiner, Art Unit 3655  
June 7, 2009